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| APPLICATION NO.                           | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/775,075                                | 02/11/2004  | Kensaku Shinozaki    | 042100              | 3422             |
| 38834                                     | 7590        | 10/24/2007           | EXAMINER            |                  |
| WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP |             |                      | VAN, LUAN V         |                  |
| 1250 CONNECTICUT AVENUE, NW               |             |                      | ART UNIT            | PAPER NUMBER     |
| SUITE 700                                 |             |                      | 1795                |                  |
| WASHINGTON, DC 20036                      |             |                      | MAIL DATE           | DELIVERY MODE    |
|   |             |                      | 10/24/2007          | PAPER            |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

|                              |                 |                    |
|------------------------------|-----------------|--------------------|
| <b>Office Action Summary</b> | Application No. | Applicant(s)       |
|                              | 10/775,075      | SHINOZAKI, KENSAKU |
|                              | Examiner        | Art Unit           |
|                              | Luan V. Van     | 1795               |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 26 September 2007.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) 7-9 is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-6 and 10-12 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|   | 6) <input type="checkbox"/> Other: _____.                         |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 26, 2007 has been entered.

### ***Response to Amendment***

Applicant's amendment of September 26, 2007 does not render the application allowable.

### ***Status of Objections and Rejections***

All rejections from the previous office action are maintained.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 4 and 12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wolski et al. '140.

Regarding claim 1, Wolski et al. '140 teach an electrodeposited copper foil wherein part of its surface comprises a rough surface having knob-like projections (or nodules, column 3 lines 18-22) and a surface roughness of 3.3 to 3.7 micrometer (on the matte side, see comparative example 1 in table 2 and table 3), which is within the range of the instant claim. In addition, the limitation "the copper foil is an untreated copper foil" is a process limitation, and thus is not given patentability weight, since the copper foil is distinguished by the surface roughness characteristic and not by whether it has been treated or untreated.

As described above, according to MPEP 2113, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

In addition, it would have been obvious to one having ordinary skill in the art to have recognized that the projections of Wolski et al. '140 are inherently intermittent, because the foil is made by the same method, i.e. electrodepositing (see Abstract), and has the same roughness as that of the instant claim.

Regarding claim 2, Wolski et al. '140 teach an electrodeposited copper foil wherein part of its surface comprises a rough surface having knob-like projections (or nodules, column 3 lines 18-22) and a surface roughness of 3.3 to 3.7 micrometer (on the matte side, see comparative example 1 in table 2 and table 3) is a surface of an untreated copper foil for bonding with a resin substrate and is further roughening treated by running a predetermined current (table 1) through the foil for a predetermined time in an electroforming bath. The electrolysis is inherently performed for a predetermined time.

Regarding claim 4, Wolski et al. '140 teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer (column 5 lines 30-35).

Regarding claim 12, Wolski et al. '140 teach 3-mercaptop propane sulfonate (column 4 line 67).

***Claim Rejections - 35 USC § 103***

Claims 1, 2, 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolski et al. '140 in view of Fatcheric et al. (assuming the projections are not inherently intermittent).

Wolski et al. '140 teach the copper foil as described above. The difference between the reference to Wolski et al. '140 and the instant claims is that the reference does not explicitly teach the projections are intermittent.

Fatcheric et al. teach roughening treating the copper foil by depositing a fine nodular metal deposit, such as copper or copper alloy, in order to improve the adhesion to a substrate (Abstract). The nodules on the copper foil as seen in Fig. 2 are broadly interpreted to be intermittent.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the foil of Wolski et al. '140 by forming the intermittent projections of Fatcheric et al., because it would improve the adhesion of the copper foil to a substrate. Furthermore, it would have been obvious to one having ordinary skill in the art to have expected that the foil of Wolski et al. '140 would have the intermittent projections of Fatcheric et al., because Wolski et al. '140 use the same process, i.e. depositing copper nodules on the foil, to treat the copper foil as that of Fatcheric et al.

Regarding claim 2, Wolski et al. '140 teach an electrodeposited copper foil wherein part of its surface comprises a rough surface having knob-like projections (or nodules, column 3 lines 18-22) and a surface roughness of 3.3 to 3.7 micrometer (on the matte side, see comparative example 1 in table 2 and table 3) is a surface of an untreated copper foil for bonding with a resin substrate and is further roughening treated by running a predetermined current (table 1) through the foil for a predetermined time in an electroforming bath. The electrolysis is inherently performed for a predetermined time.

Regarding claim 4, Wolski et al. '140 teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer (column 5 lines 30-35).

Regarding claim 12, Wolski et al. '140 teach 3-mercaptop propane sulfonate (column 4 line 67).

Claims 3, 5, 6 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolski et al. '140 in view of Fatcheric et al.

Wolski et al. '140 teach the copper foil as described above. The difference between the reference to Wolski et al. '140 and the instant claims is that the reference does not explicitly teach forming an additional nickel, zinc, cobalt layer or alloy thereof and a chromate layer.

Fatcheric et al. teach an electrodeposited copper foil, wherein said electroforming bath is an acidic electroforming bath containing nickel, cobalt, zinc or arsenic for

depositing the respective metal or alloys thereof (column 5 lines 7-17). Additionally, Fatcheric et al. teach an electrodeposited copper foil wherein said rough surface is further formed with a copper plating layer and at least one layer of nickel plating, zinc plating, cobalt plating, plating of an alloy of the same (column 5 lines 13-20) and a chromate treatment layer (column 5 lines 21-23) on that, or further formed with a coupling agent treatment layer (column 5 lines 21-24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the foil of Wolski et al. '140 by depositing a zinc layer of Fatcheric et al., because the zinc layer provides a barrier layer between the copper foil and the laminating resin substrate in order to prevent laminate staining which occurs when ingredients of the resin chemically react with copper (column 4 lines 50-55). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the foil of Wolski et al. '140 by depositing a chromate layer of Fatcheric et al., because it would provide a protective layer for the underlying barrier layers (column 5 lines 21-22).

### ***Response to Arguments***

In the arguments presented on pages 6-8 of the amendment, the applicant argues that the copper foil having deposited copper nodules in Wolski et al. is structurally distinguishable from the knob-like projections of the copper foil in the instant invention because they are formed by a different process. The examiner respectfully disagrees. According to Webster's dictionary, a knob is defined as "a relatively small

usu rounded mass typically projecting from the surface or extremity of something : a usu. rounded projection or protuberance or protrusion". The knob-like projections of claim 1 therefore broadly read on the copper nodules of Wolski et al. Furthermore, the arguments of counsel cannot take the place of evidence in the record. *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). Objective evidence which must be factually supported by an appropriate affidavit or declaration to be of probative value includes evidence of unexpected results, commercial success, solution of a long-felt need, inoperability of the prior art, invention before the date of the reference, and allegations that the author(s) of the prior art derived the disclosed subject matter from the applicant. See, for example, *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984). See MPEP 716.01(c).

Applicant's arguments have been fully considered but they are not persuasive.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan V. Van whose telephone number is 571-272-8521. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LVV  
October 19, 2007

  
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